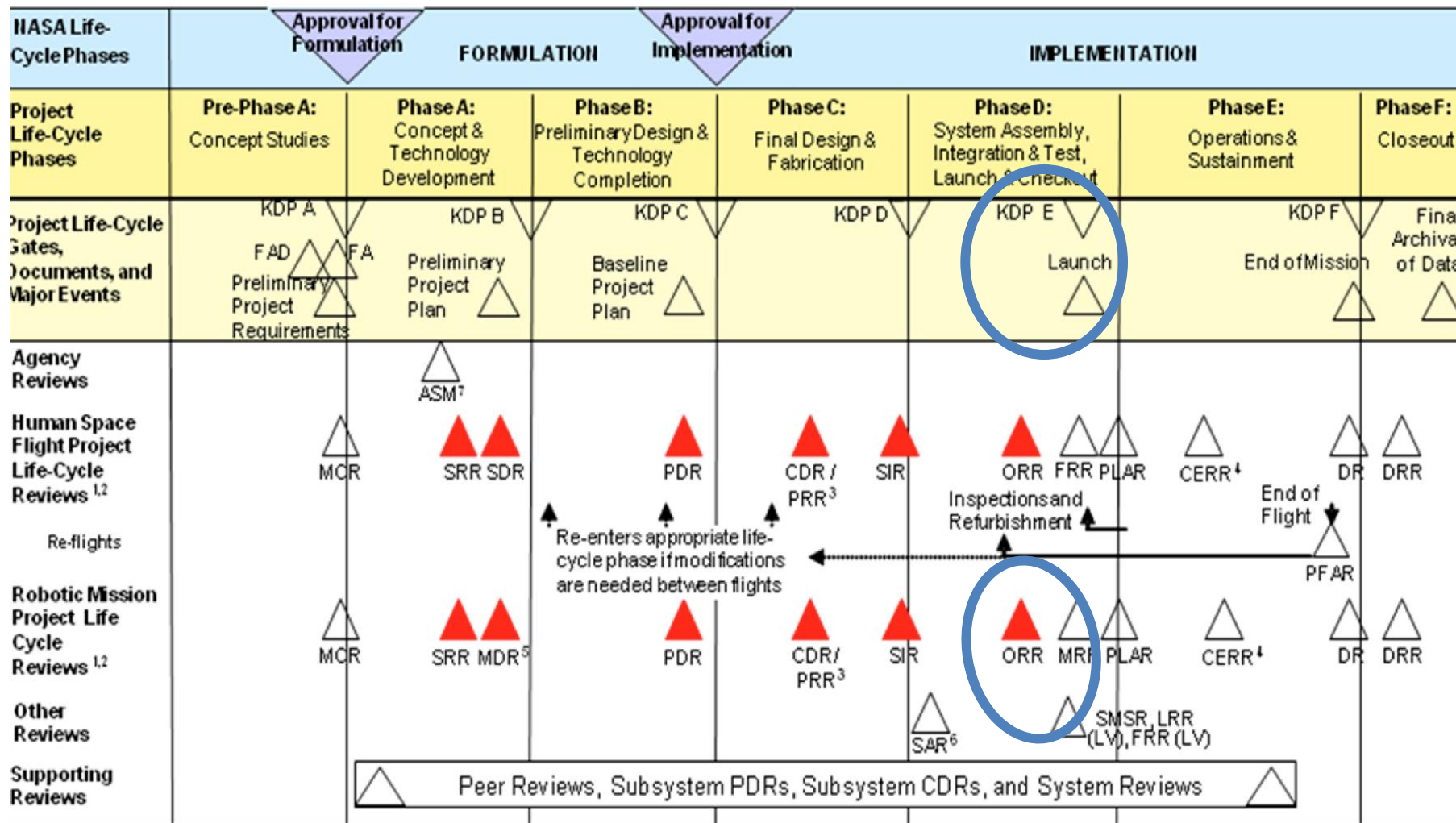


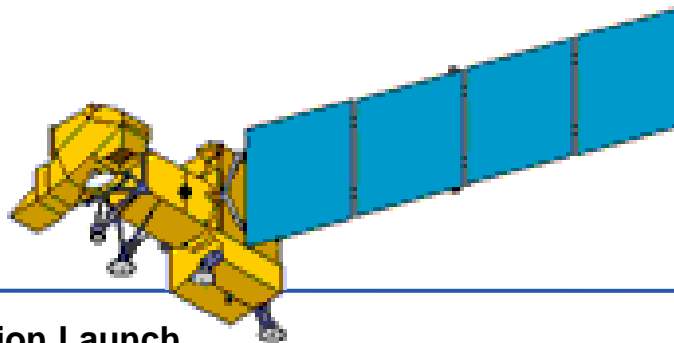
NPR 7120.5E NASA Project Life Cycle

LDCM


One Landsat in Orbit

LDCM

- Landsat 5 was officially “retired” when deorbiting and decommissioning began on January 15, 2013
 - Launched in 1984, Landsat 5 exceeded its 3 year design life by 25 years.
- Landsat 7 is still collecting global data
 - Launched in 1999 with a 5 year design life, the Landsat 7 mission is about to begin its 14th year.
 - Robust global acquisitions are continuing.
 - ETM+ 2003 scan-line corrector failure means 22 percent of each scene is missing.
 - Fuel-based end-of-life is 2017.



Successfully Completed Observatory Environmental Testing

LDCM



EMI/EMC Aug. 2012



Dynamics Sept. 2012

Post-Dynamics
Solar Array Deploy
Oct. 2012



Thermal Vacuum Oct-Nov 2012



Observatory Status and Readiness

LDCM

Observatory Shipment to VAFB

- Successful Pre-Ship Review 12/14-15 & arrived at VAFB on 12/19

Observatory post-ship activities proceeding as planned

- Post-shipment Comp. Perf. Test completed
- Pad Aliveness Test dry run completed
- Solar Array First Motion, Re-stow, & current measurements completed
- Solar Array NEA flight installation & electrical verification completed
- Prop functional & fueling completed
- Mate to PLA completed
- Battery reconditioned
- Observatory encapsulated into LV fairing
- Transported to pad 1/25 and mated to LV
- Successful Pad Aliveness test completed

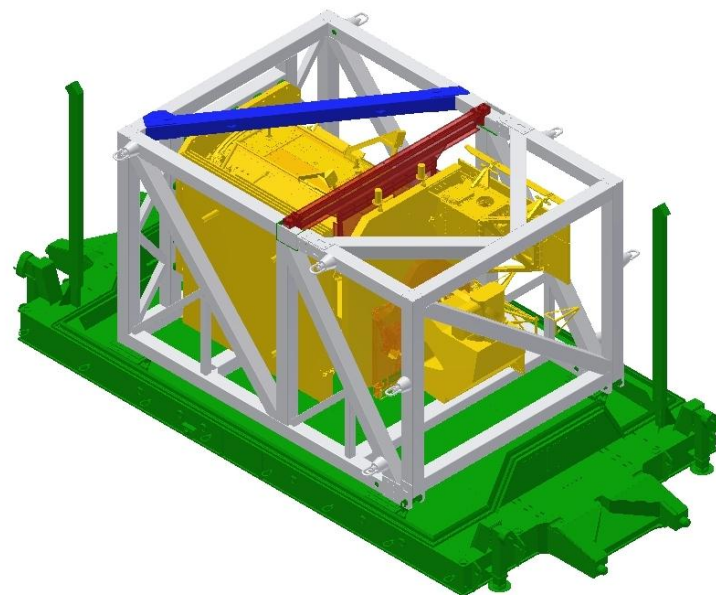
Observatory On Track For Launch!



LDCM Transporter

LDCM

- LDCM Transporter completed fabrication in July 2012 by Nelson Manufacturing in Ohio
- A successful “Pathfinder” dry-run trip was made from Orbital to VAFB in August
- Removable front and rear bogies
- Hydraulically adjustable ride height (0” - 12”)
- Air bearing equipped center section
- Environmentally controlled
- Live wirelessly monitored parameters
- 13’-9” tall x 14’-8” wide x 80’ long and 115,000 lbs



LDCM Observatory En Route

LDCM

Leaving Orbital facility



Arriving at Vandenberg



LANDSAT Data Continuity Mission Launch

Safe in the processing facility



Settling into Launch Processing

LDCM



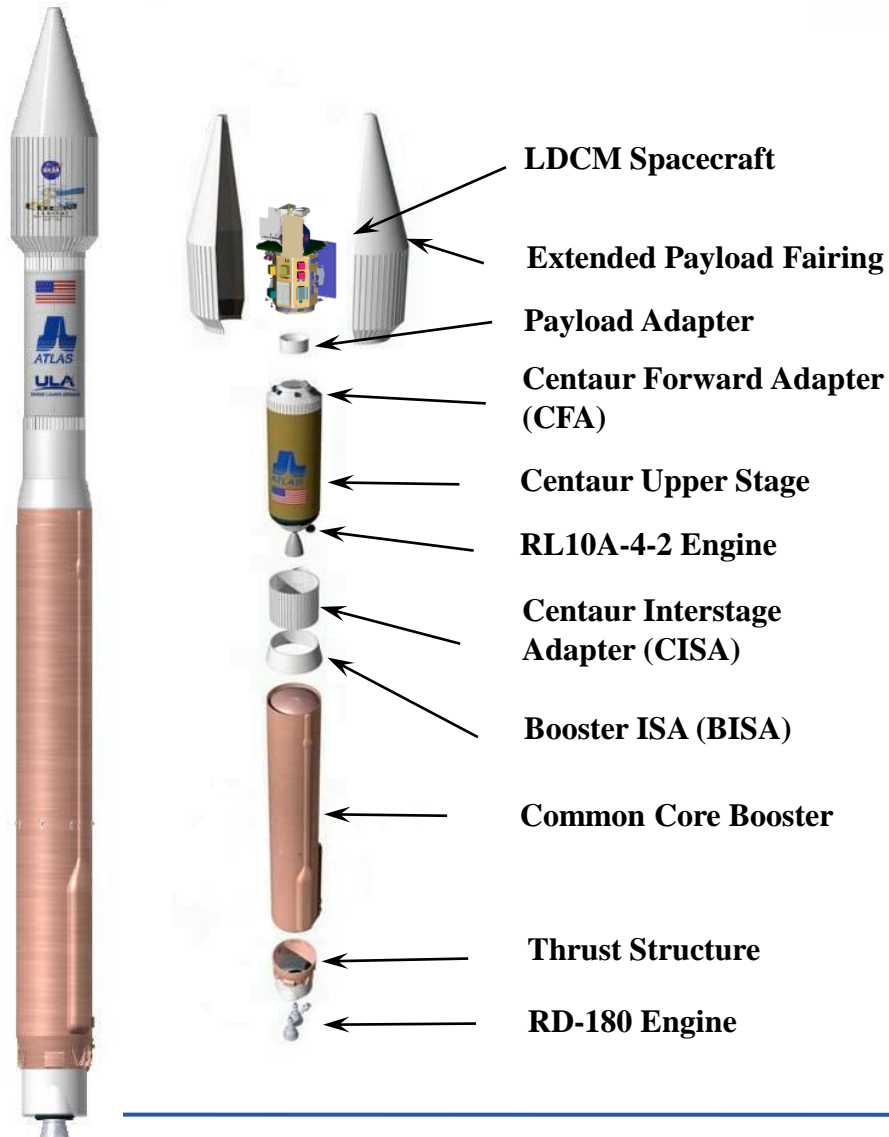
LANDSAT Data Continuity Mission Launch



Encapsulation

LDCM

Atlas V Launch Vehicle

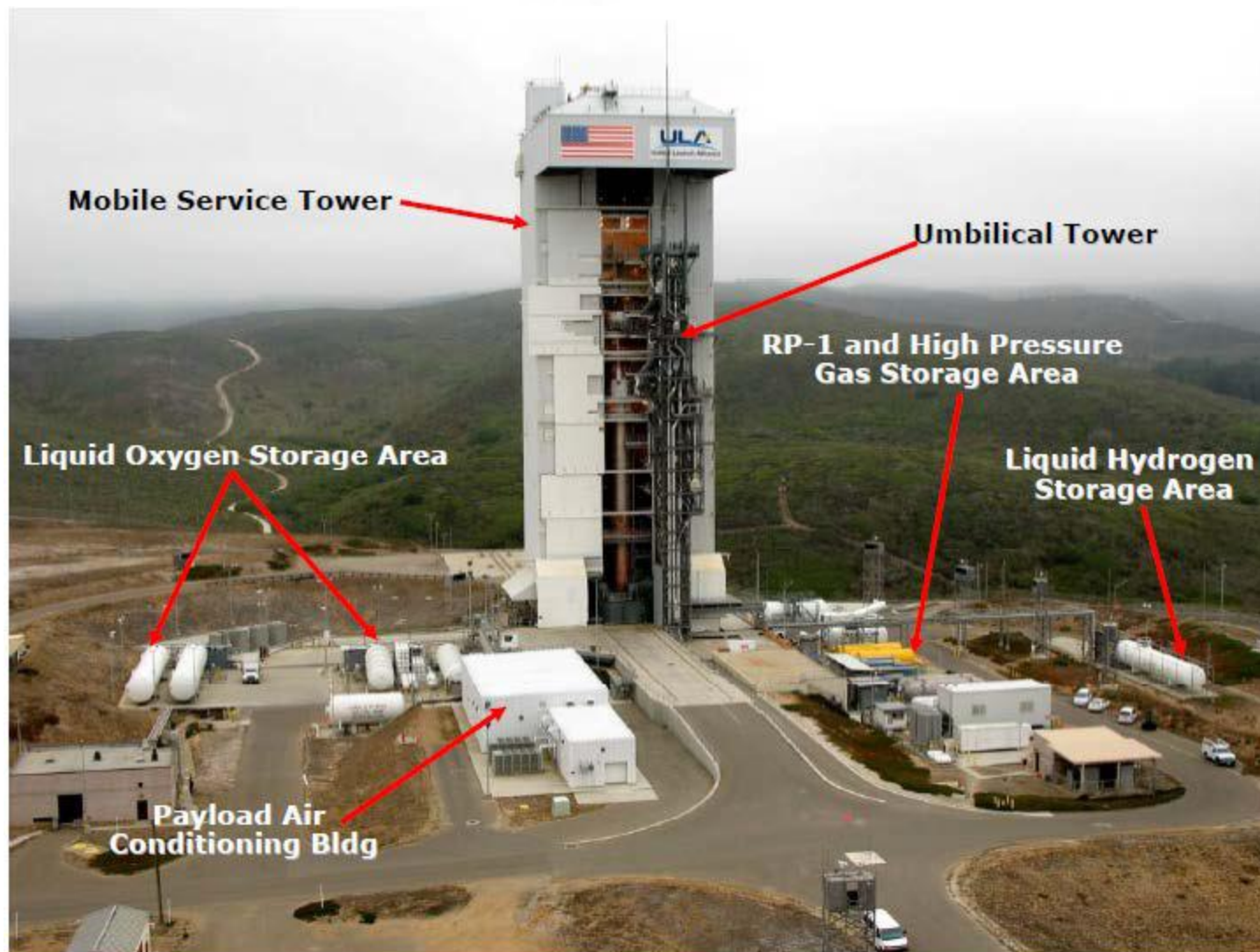
LDCM

Vehicle Configuration

- **Atlas V 401 (AV-035)**
 - 4 Meter Extended Payload Fairing (EPF)
 - Centaur w/ Single RL10A-4-2 Engine
 - Core Atlas Booster w/ RD-180 Engine
 - C22 Launch Vehicle Adapter
 - D1666 Payload Support Ring
 - LSPSS 1666 Separation System
 - On-board Video System
- **LDCM will be**
 - 36th Atlas V launch
 - 6th Atlas V from VAFB
 - 16th Atlas V 401 configuration
 - 9th NASA Atlas V mission
 - 1st NASA Atlas V launch from VAFB

Space Launch Complex -3 (SLC-3)

LDCM



First Stage Booster & RD-180 Engine

LDCM



LANDSAT Data Continuity Mission Launch

Interstage Adapter and Centaur Upper Stage

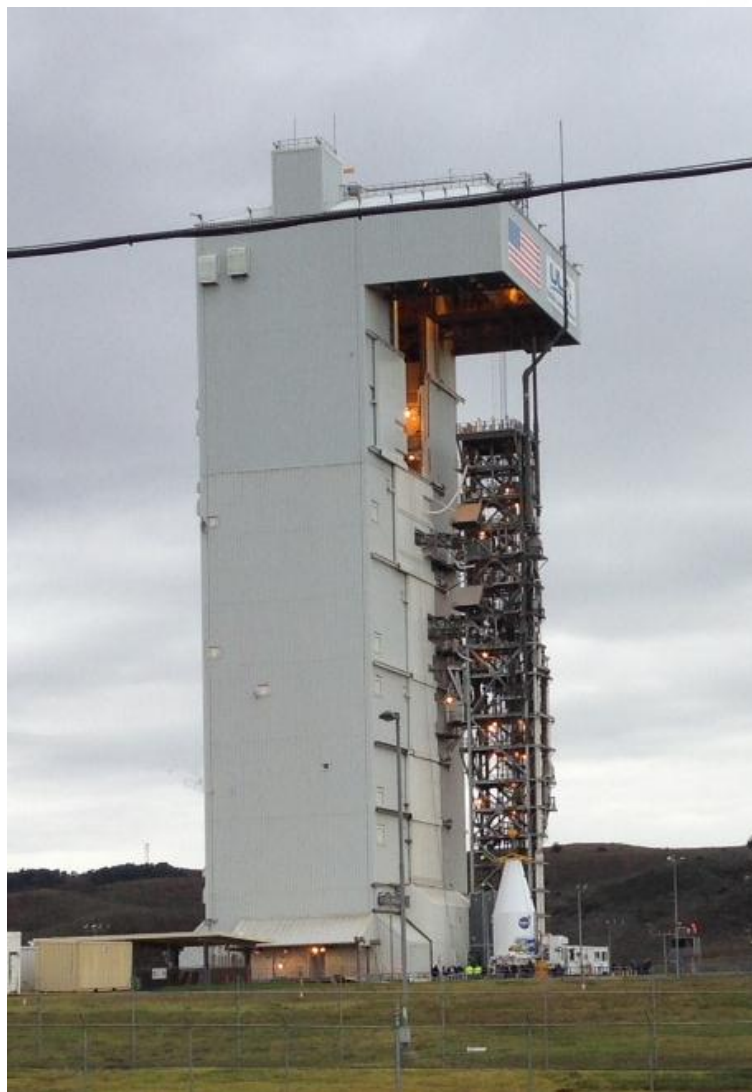
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LANDSAT Data Continuity Mission Launch

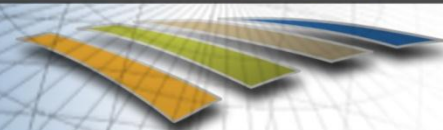


Fairing Lift

LDCM

LANDSAT Data Continuity Mission Launch





Ground System Element Readiness (1/3)

LDCM

- Mission Operations Element (MOE)
 - Includes command/control, mission planning, flight dynamics, off-line trending/analysis
 - Final delivery (Build 5.0.5) installation & testing complete
 - MOE is ready for Launch / Commissioning
- Collection Activity Planning Element (CAPE)
 - Generates daily LDCM science imaging schedule
 - Final delivery (Build 3.1) installation & testing complete
 - CAPE is ready for Launch / Commissioning
- Spacecraft/Observatory Simulator (SOS) and Softbench Simulators
 - Simulators up-to-date with latest Flight Software & databases
 - Continuing to investigate 1 open issue
 - Simulators do not accurately model EPS
 - Simulator EPS issue is fully mitigated for launch and early orbit via extensive on-site Orbital support. Plan to implement long-term solution by L + 60 days
 - SOS and softbenches are ready for Launch / Commissioning

Ground System Element Readiness (2/3)

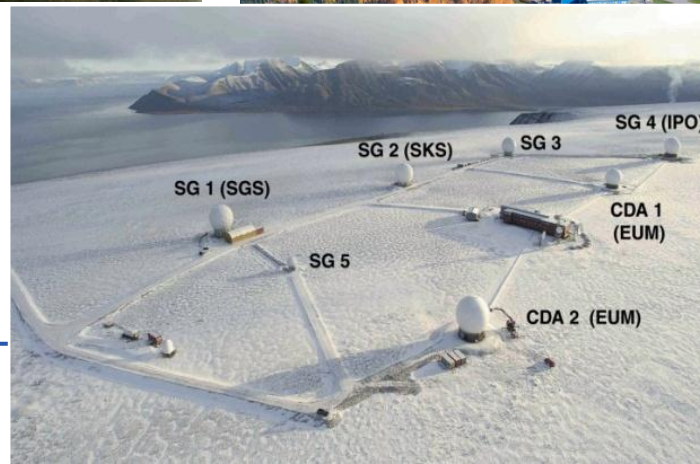
LDCM

- Ground Network Element (GNE)
 - Completed LDCM-specific hardware upgrades at all LDCM ground stations
 - Final software delivery (Build 5.1) integration & testing complete
 - Executed several connectivity tests & proficiency exercises between MOC & each station
 - GNE is ready for Launch / Commissioning

Gilmore Creek station (GLC)
Gilmore Creek, AK



Landsat Ground Station (LGS)
USGS/EROS, Sioux Falls, SD



Svalbard Ground Station (SGS)
Svalbard, Norway

Ground System Element Readiness (3/3)

LDCM

- Data Processing and Archive System (DPAS)
 - Located at USGS/EROS facility, Sioux Falls, SD
 - Performs science data ingest, processing, archival, and distribution
 - Completed all algorithm development
 - Demonstrated ability to process data directly from observatory
 - Final delivery (Build 4.1) integration & testing complete
 - DPAS is ready for Launch / Commissioning



Mission Operations Center / Launch Support Room

LDCM

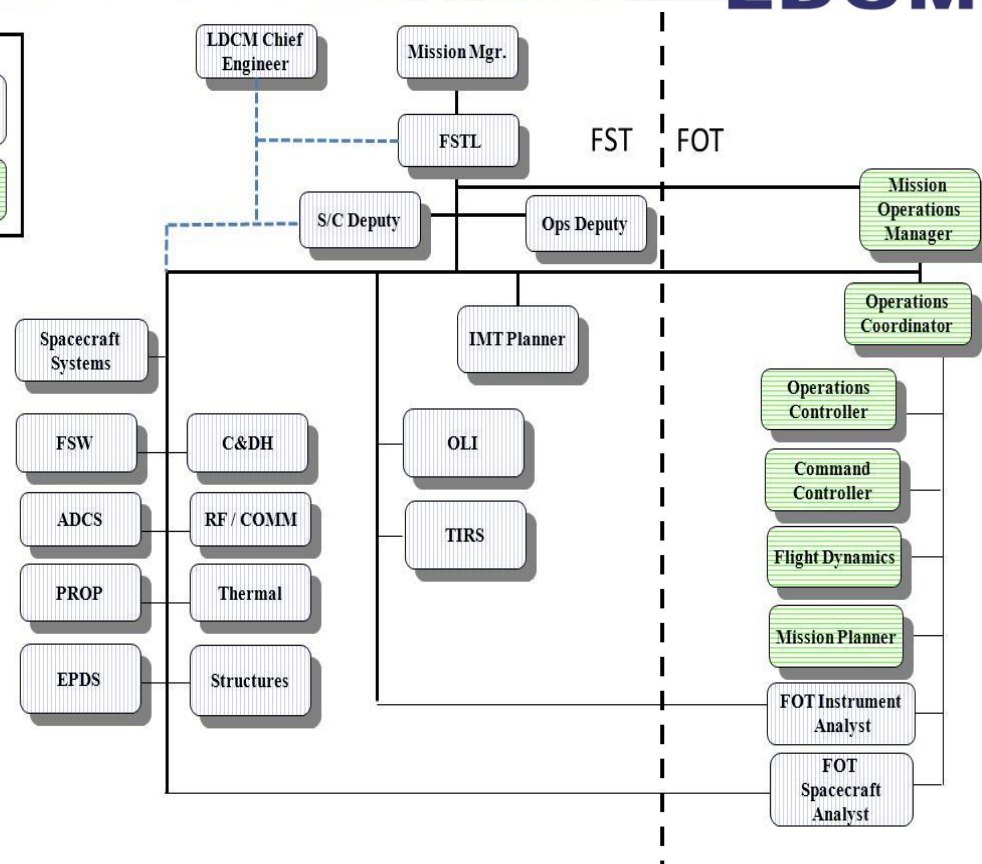
- Mission Operations Center (MOC); GSFC Bldg. 14
 - Flight Operations Team performs all flight operations functions here
- Launch Support Room (LSR); GSFC Bldg. 14
 - Used by Flight Support Team from launch – end of commissioning
- MOC & LSR extensively exercised during Observatory I&T, Mission Readiness Tests, Mission Operations Simulations, & Launch Rehearsals
- MOC & LSR ready for Launch / Commissioning



LDCM Launch Team

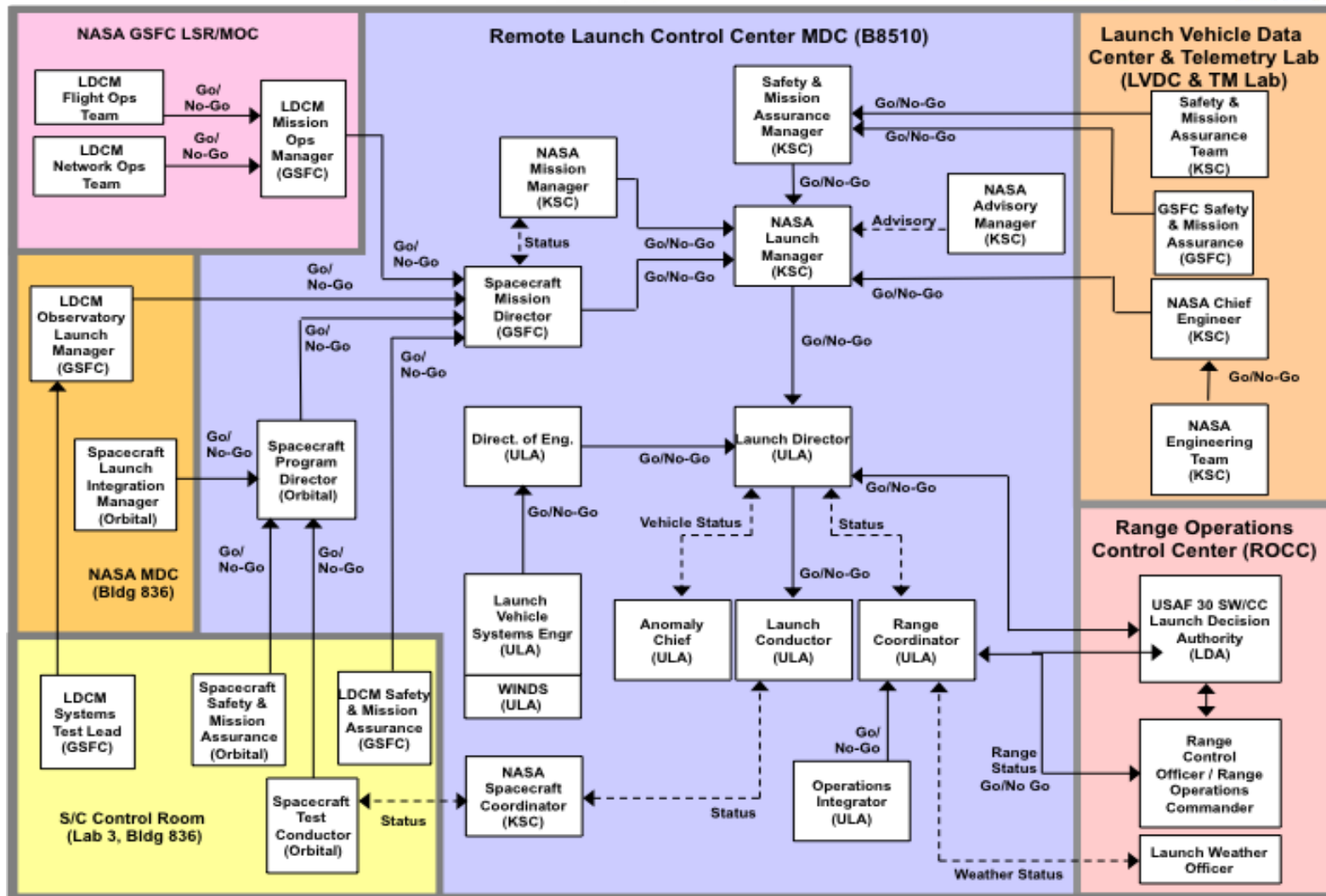
LDCM

- Led by LDCM Mission Manager
- Consists of:
 - Flight Support Team (FST)
 - Engineering team supporting LEO&A
 - Includes: Orbital, BATC, TIRS & Project Engineers
 - Led by FST Lead (FSTL) - oversees execution of mission timeline
 - Flight Operations Team (FOT)
 - Executes/conducts flight operations for life of mission



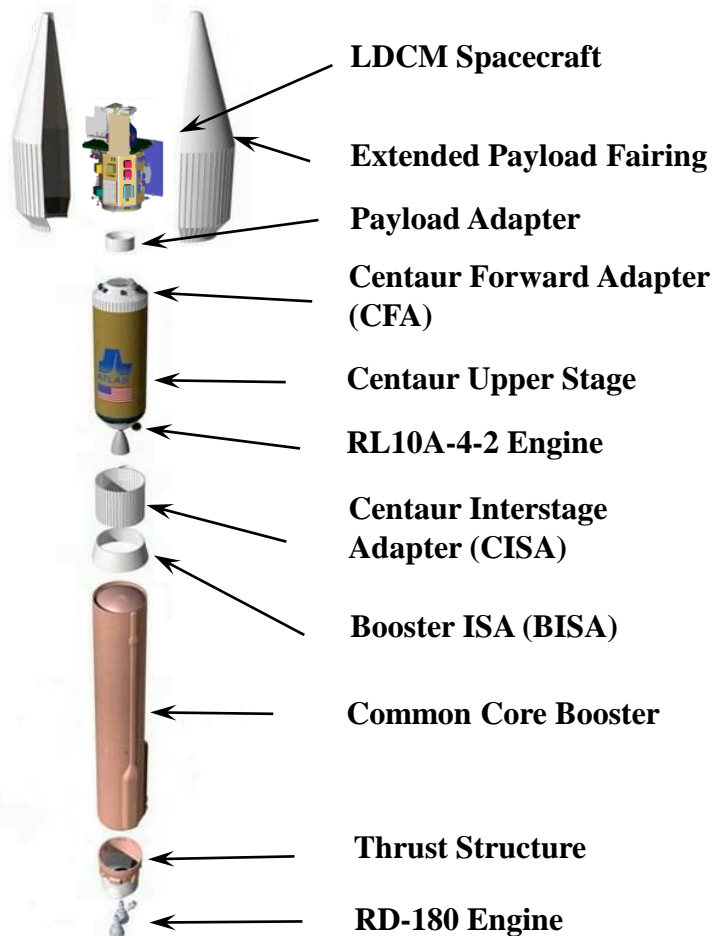
Launch Decision Flow

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Atlas V Launch Vehicle

LDCM

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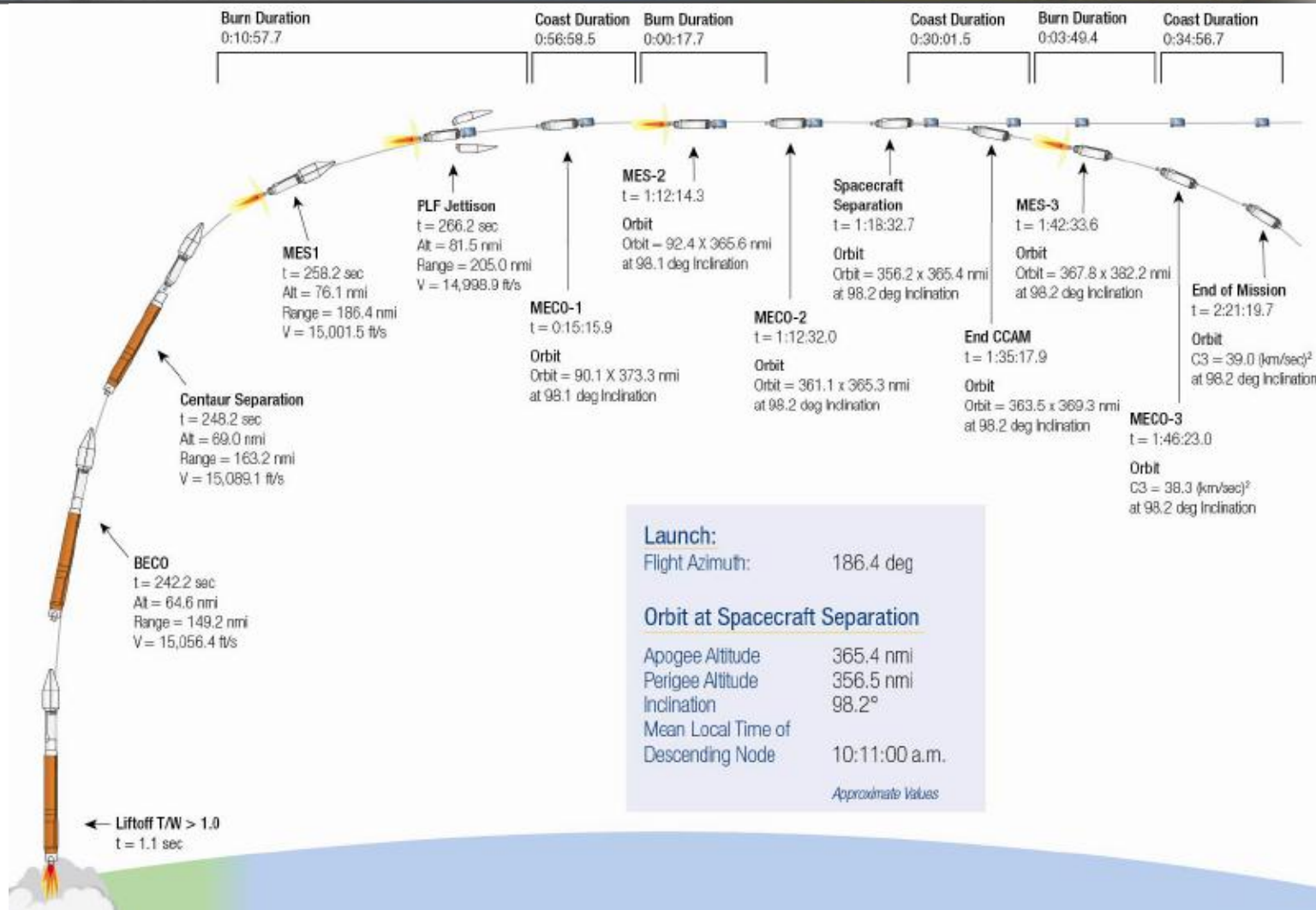
Mission Parameters

LDCM

Launch Vehicle Configuration:	Atlas V 401
Launch Site:	WR SLC-3E
Launch Date/Time:	11 February 2013 / *10:02:00 PST (18:02:00 GMT)
Spacecraft Mass:	2823.6 kg (6225 lbm)
Launch Window:	*Single 48 min opportunity each day, any day, beginning with the opening of the launch window
Flight Azimuth:	186.39 deg
Free Molecular Heating (FMH) at PFJ:	$\leq 1135 \text{ W/m}^2$
Thermal Conditioning Roll During Coast:	1.0 +/- 0.5 deg/sec
Sun Angle Requirement During Coast:	LV +X axis perpendicular to the Sun Vector within +/-5 deg
LDCM Targets at 1 st Descending Node: Apogee: Perigee: Inclination: Mean Local Time/Descending Node:	685 +/- 10 km 685 +/- 10 km 98.22 +/- 0.09 deg 10:11 am +/- 1 min
Centaur Disposal:	3 rd burn to achieve Earth-escape velocity

Optimal Flight Profile

LDCM



Groundtrack

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